

## **Advanced Genetics BIOL 461/ BIOL 687**

**Instructor:** William Zerges PhD

**Course Description:** This course explores genetics as a science and a set of analytical approaches used in biological research. The goals are to familiarize students with 1) genetics as the science of heredity, gene expression, developmental programs and other phenomena, 2) the rationale and methodologies used in genetic analyses, 3) the history of major discoveries in genetics, 4) relationships of genetics to other areas of the biological sciences (e.g. biochemistry, genomics, physiology, developmental biology), 5) and how scientific research articles and databases in genetics serve the scientific community.

**Course structure:** Some classes will be lectures and discussion to introduce an area of genetics and one type of genetic analysis. Other classes will explore original research articles through class discussion of an assigned article. Reading of these articles in advance is required. Some articles will be classics, i.e they opened an area of genetics using relatively simple approaches. Other articles will cover research at the forefront of science. We will discuss research using eukaryotic model organisms: the fruit fly *Drosophila melanogaster*, the nematode *C. elegans*, the budding yeast *Saccharomyces cerevisiae*, the mouse *Musca domestica*, and the plant *Arabidopsis thaliana*.

**Readings:** The course website provides links to review articles and original research articles. No textbook is assigned. Students are expected to read the assignments in advance of class discussions and lectures.

**Grades** will be based on a midterm exam, a final exam, and two written reports: a minireview of scientific literature and a mock fellowship proposal.

**Office hours:** By appointment.